Air Force SBIR Impact

Polymer Sensor Enables Chemical Warfare Agents Detector

Company:
Physical Sciences Inc.

Location:
Andover, MA

Employees:
140

President:
George E. Caledonia

Project Officers:
Dr. Edmond Murad, AFRL Space Vehicles Directorate, Hanscom Field, MA

Ms. Catina Sparaco, ESC, Hanscom Field, MA

Air Force Requirements:

The Air Force required a compact and inexpensive detector to help alert personnel to the presence of chemical warfare agents (CWAs) in the field.

SBIR Technology:

Physical Sciences Inc. (PSI) was awarded SBIR contracts to develop an Individual Chemical Alarm System (ICAS). This system detects the presence of both CWAs and Toxic Industrial Compounds (TICs) based on conductive polymer sensor technology. The electroactive polymer sensors used in the ICAS are engineered to respond to low concentrations of specific classes of chemical compounds. The conductivity of the polymer sensor changes irreversibly upon exposure to a target compound, and the change in polymer resistance provides a measure of the exposure dose. The unit monitors the resistance and alerts the wearer when the relative change in resistance reaches specific thresholds.

For more information on this story, contact Air Force TechConnect at 1-800-203-6451 or at www.afrl.af.mil/techconn/index.htm

The ICAS that Physical Sciences developed met several needs of the Air Force besides being compact and relatively inexpensive:

- It alerts the wearer to adopt protective measures in the event of a chemical exposure
- Provides real-time chemical threat information to field commanders, and
- Documents individual exposure histories for subsequent downloading by medical personnel.

Company Impact:

Following development of the polymer sensor technology, PSI has followed up its initial Air Force SBIR success by engineering field prototypes for other DoD service components. Various military groups are evaluating approximately 200 units.

Company Quotes :

"SBIR funding from AFRL enabled PSI to develop the critical polymer sensor detection technology as well as initial prototypes that were essential to attracting engineering development support from other DoD agencies."

Dr. Michael L. Finson
Exec VP & CTO
Physical Sciences Inc.

"There is a need for warning the warfighter of possible exposure to toxic industrial chemicals in addition to chemical warfare agents. Physical Sciences Inc. submitted a unique proposal to address such a need. Most of the hundred badges received by AFRL/VSB were given to ESC (Electronic Systems Center) for testing and evaluation."

Dr. Edmund Murad, AFRL/VSBX
SBIR Project Officer

SBIR

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